

Week 3-Lesson Plan

Task 1: Build a driving base (<https://education.lego.com/en-us/lessons/prime-competition-ready/training-camp-1-driving-around/>)

Challenges:

(students to add comments as and when necessary in the blocks)

Moving Straight: Lego spike prime v3

Challenge 1 : Move 10 CM

- Move the robot 10 centimeters forward

Challenge 2: Move Forward and Back

- Move your robot forward from the start line to the finish line (1) and back to the start (2)

Challenge 3: moving For 3 Seconds

- Use Start Moving, Stop Moving and Wait blocks to make the robot move forward for 3 seconds

Turning with Gyro: Lego spike prime V3

Challenge 4: Make a 90 degree to right

- Write a program that turns 90 degrees to the right

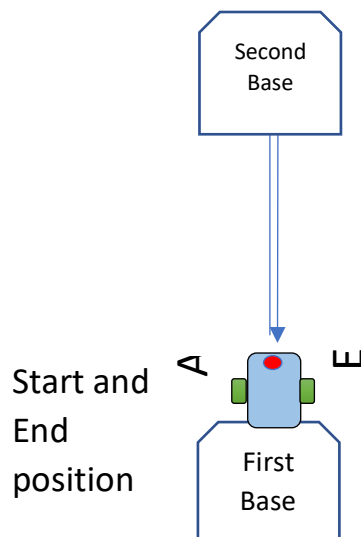
Challenge 5: Moving in a square

- Moving in a square making 90 degree right turns.

Challenge 6: Turn around

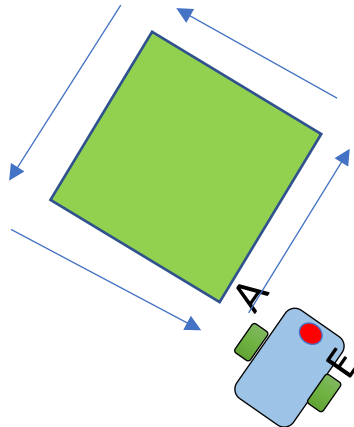
- Your robot is a baseball player who must run to second base, turn around and come back to first.

[Go straight. Turn 180 degrees and return to the same spot.]



Challenge 7: Moving in a square

- Your robot is a baseball player who has to run to all the bases and go back to home plate. program your robot to move forward and then turn left?
- [Use a square box or tape]



Accurate Turning : Lego spike prime V3

Improving pivot Turn Accuracy

Challenge 8

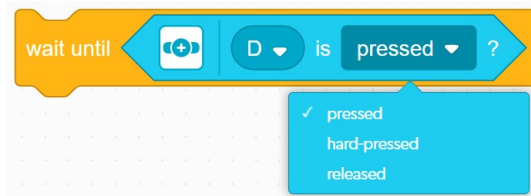
- Make a 90 degree right pivot turn using just movement blocks.

Force Sensor

Force Sensor Lego spike prime v3

Challenge 9

- Program your robot to move forward until you press the sensor with your hand
 - > Try using the sensor in Pressed and Hard-Pressed Modes
 - > You will use the wait until block for this challenge

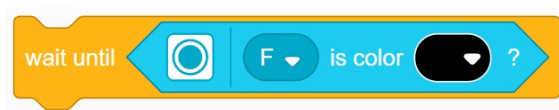


Color sensor

Color Sensor Lego spike prime v3

Challenge 10

- Program your robot to move forward until the color sensor sees black
 - > You will need to use the Wait For block and the Boolean block of the color sensor



Additional Challenges:

Challenge 11

- Program your robot to move in a triangle
- Program your robot to move in a Circle

Competition Ready challenge- Distance Sensor

Training Camp 2: Playing with Objects (30 mins)

<https://education.lego.com/en-us/lessons/prime-competition-ready/training-camp-2-playing-with-objects/>

Use sensors to control motors and interact with objects on the competition field.

Key Objectives:

Students will:

- Use estimation to stop at an object
- Use the Distance Sensor to detect an object and respond

Things you will need

[LEGO® Education SPIKE™ Prime Set](#)

Assessment Criteria

Teacher Observation Checklist

Scale to grade:

1. Partially accomplished
2. Fully accomplished
3. Overachieved

success criteria for evaluating your progress:

- Students can expand their program to retrieve an object.
- Students can use the Distance Sensor to detect and retrieve an object.
- Students can change the parameters of the Distance Sensor Blocks to detect different distances.

Career Links

Students who enjoyed this lesson might be interested in exploring these career pathways:

- Information Technology (Game Programming)
- Manufacturing and Engineering (Machine Technology)
- Manufacturing and Engineering (Pre-Engineering)

Lab 3: Student journal

1. Why do engineers document changes to a design solution?
2. How do engineers use motors in a design to help solve a problem or make life easier? (e.g., conveyor belts to move items; robotic vacuums to move across a floor)
3. How do engineers use sensors in a design to help solve a problem or make life easier? (e.g., automatic doors at stores)
4. Now, move your hand so that only one side of the distance sensor can see it.
What happens when you play the program now?
 - o Can you tell which side of the ultrasonic sensor sends information and which side receives it?
 - o why the orientation of the sensor would be important when adding it to a model.